WHAT IS CLAIMED IS:

1. An occlusive device for use in interventional therapy and vascular surgery adapted to be inserted into a portion of a vasculature for occluding the portion of the vasculature of a patient, comprising:

a variable stiffness coil formed from at least one flexible strand of a flexible material having a primary coil configuration, said coil having a plurality of segments heat treated to cause the plurality of segments to have reduced stiffness.

2. The occlusive device of Claim 1, wherein said variable stiffness coil has an expanded secondary coil configuration with a secondary three dimensional shape.

3. The occlusive device of Claim 2, wherein said secondary three dimensional shape is generally spherical.

4. The occlusive device of Claim 2, wherein said secondary three dimensional shape is generally helical.

5. The occlusive device of Claim 1, wherein said at least one flexible strand comprises a super-elastic material.

6. The occlusive device of Claim 5, wherein said super-elastic material comprises a nickel-titanium alloy.

7. The occlusive device of Claim 6, wherein said nickel-titanium alloy is heat treated such that the alloy is highly flexible at a temperature appropriate for introduction into the vasculature via a catheter, and after placement, the device will take on a shape designed to optimize the therapeutic purposes desired for the device.

8. The occlusive device of Claim 1, wherein said at least one strand

of flexible material is a strand of shape memory metal alloy.

9. The occlusive device of Claim 8, wherein said shape metal alloy is a nickel-titanium alloy.

10. A method for making a variable stiffness occlusive coil for use in interventional therapy and vascular surgery adapted to be inserted into a portion of a vasculature for occluding the portion of the vasculature of a patient, comprising the steps of:

providing a coil formed from at least one flexible strand of a shape memory metal, said coil having a primary coil configuration and an initial stiffness; and

heat treating a plurality of segments of said coil to cause said plurality of segments to have reduced stiffness.

11. The method of Claim 10, wherein said step of providing a coil comprises heating said coil in a desired three dimensional configuration to set said three dimensional configuration.

12. The method of Claim 11, wherein said shape memory metal has an Austenite phase finish temperature, and said step of heating said coil comprises heating said coil at about 475° C to 525° C for about 1 to 20 minutes to set the Austenite phase finish temperature of the coil to about -5° C to 10° C.

13. The method of Claim 10, wherein said step of heat treating comprises artificially aging a plurality of segments of said coil to raise the Austenite phase finish temperature to about 35° C to 50° C.

14. The method of Claim 10, wherein said step of heat treating comprises heating a plurality of segments of said coil to a temperature of about 375° C to 425° C for a period of about 5 seconds to 30 minutes.

15. The method of Claim 10, wherein said step of heat treating comprises heat treating a distal segment of said coil to cause said distal segment to have reduced stiffness.